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SOURCE Pamphlets and periodicals as indicated.

SPECIFICATIONS OF FIVE USSR TRACTORS

[Numbers in parentheses refer to appended sources.]

SPECIFICATIONS OF THE UNIVERSAL-2 TRACTOR

Type tractor	Wheel, plowing
Weight in operating condition (kg)	2,065
Over-all dimensions (mm):	
Length	3,320
Width	1,650
Height	2,120
Tread (mm):	
Front	1,390
Rear	1,340
Minimum turning radius (mm)	4,000
Road clearance of front axle (mm)	500
Engine	4-cycle, carburetor
Horsepower	22
Rpm of crankshaft	1,200
Type block casting	Monoblock
Number of cylinders	4
Cylinder bore (mm)	95
Piston stroke (mm)	127
Compression ratio	4.1

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Firing order	1, 3, 4, 2
Starting	Starting crank
Air cleaner	Combination, metal packing with oil reservoir
Lubrication	Combination pressure and splash
Cooling system	Forced circulation, water
Transmission	3 speeds forward, one reverse
Clutch	Dry, single-plate
Speed (km/hr):	
First gear	3.4
Second gear	4.8
Third gear	7.2
Reverse	4.4
Fuel	Kerosene, gasoline for starting
Fuel tank capacities (liters):	
Kerosene	80
Gasoline	3
Ignition	High-voltage magneto
Diameter of spark plugs (mm)	22
Illumination	Electrical, from dynamo
Additional equipment	Power takeoff shaft with speed of 536 rpm; drive pulley on right side of tractor; diameter of pulley, 360 mm; rotation speed of pulley, 696 rpm.(1)

SPECIFICATIONS OF UNIVERSAL-4 TRACTOR

The Vladimir Tractor Plant imeni Zhdanov has designed the Universal-4 tractor for use with the SKM-48 cotton picker. This tractor is a new modification of the Universal-1. Besides cotton picking, the tractor can be used for sowing, harrowing, cultivating, and for stationary work. The tractor can be equipped with pneumatic tires or with steel rimmed wheels, depending on the type of work being done.

Calculated speed, discounting slipping (km/hr):

First gear	4
Second gear	5.7
Third gear	7.4
Reverse	5
Minimum turning radius (mm)	2,500
Wheel base (mm)	2,170
Tread of rear wheels (mm):	
With pneumatic tires	1,430
With steel rims	1,500

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Tire size of front wheel (inches)	6.50-16
Tire size of rear wheels (inches)	8.00-32
Road clearance under sleeves of rear axle housing (mm)	800
Weight of fueled tractor (kg)	2,000
Drawbar tractive force with steel rims and average soil conditions; stubble (kg):	
First gear	800
Second gear	500
Third gear	300
Over-all dimensions (mm)	
Length	3,165
Width	1,812
Height	2,430

The U-4 tractor will make it possible to mechanize all cotton growing operations, from sowing to picking.

U-4 tractors and SKM-48 cotton pickers tested in Central Asia gave good results.

The engine, transmission, rear axle, and final drives of the tractor are unified with the corresponding units of the U-1 tractor.

Replacing the double front wheel of the U-1 with a single front wheel mounted on a bicycle-type fork on the U-4 (see Figure 1, appended) and replacing the steel rims with pneumatic tires made it necessary to change the front end of the U-1 (see Figure 2, appended), and to replace the shoe brakes of the U-1 with band brakes (see Figure 3, appended).

During sharp turns to the left, braking is effected by a hand lever to the left of the driver, and during sharp turns to the right, by a foot pedal under the right foot.

A screen is mounted in front of the radiator to protect it from being clogged by cotton fibers. Exhaust gases are discharged upward to reduce the possibility of fires.

A fine oil filter with an ASFO-2 replaceable cardboard filter element is used, and the productivity of the oil pump has been increased.

The tractor's steering system, ignition system, and electrical equipment have been improved. The rear axle, the power take-off shaft, the longitudinal frame members, and other parts have been strengthened in view of the greater dynamic loads imposed by the weight of the cotton picker.

Total metal consumption of the tractor has been reduced by 50 kilograms; the consumption of nonferrous metals has been reduced as much as 7 kilograms per tractor.

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The SKM-48 cotton picker, used in conjunction with the U-4 tractor, replaces 60 men picking cotton by hand, and the machine-picked cotton is of better quality. The machine picks 0.2-0.25 hectare of cotton per hour.

Thus, the machine processes 2 hectares of cotton, picking about 3,000 kilograms of cotton a day, with fuel consumption of 7 kilograms per hour. Some drivers have processed 4 hectares, picking 6,000 kilograms of cotton, in a day, and the record was 8,500 kilograms of cotton a day.(2)

SPECIFICATIONS OF THE KD-35 TRACTOR

Type tractor	Crawler
Tractor weight in operating condition (kg)	3,700
Over-all dimensions (mm):	
Length	3,030
Width	1,430
Height at cab	2,210
Height at radiator top	1,390
Tread (mm)	1,090
Clearance (mm)	265
Engine	4-cycle
Engine horsepower	35
Crankshaft rpm.	1,400
Number and arrangement of cylinders	4, vertical
Cylinder bore (mm)	100
Piston stroke (mm)	130
Compression ratio	17
Firing order	1, 3, 4, 2
Cooling system	Forced, water, with thermostat
Lubrication system	Combination pressure and splash
The engine is equipped with an air preheater.	
Starting engine	2-cycle, single cylinder, carburetor
Horsepower	8.5 at 3,500 rpm
Cylinder bore (mm)	72
Piston stroke (mm)	85
Compression ratio	5.75
Transmission	
Clutch	Dry, single-plate
Transmission	3-range with direct drive, 5 speeds forward, one reverse

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Speed (km/hr):	
First gear	3.81
Second gear	4.65
Third gear	5.22
Fourth gear	6.13
Fifth gear	9.08
Reverse	3.52
Type crawlers	Cast, with flange engagement
Number of tracks	31
Width of tracks (mm)	280
Gauge of tracks (mm)	173
Electrical equipment	
Generator	GBT-4541, 65 watt, 6 volt, with disengaging clutch
Headlights	2 front and one rear
Fuel	Diesel, winter and summer: gasoline for starting motor
Fuel tank capacities (liters):	
Diesel fuel	97
Gasoline	3
Additional equipment	Power take-off shaft rotating at 544 rpm; pulley diameter, 360 mm; pulley width, 200 mm; pulley rotating speed, 695 rpm.(3)

SPECIFICATIONS OF THE S-80 TRACTOR

Type of tractor	Crawler
Weight in operating condition (kg)	11,400
Over-all dimensions (mm):	
Length	4,228
Width	2,456
Height	2,767
Distance between caterpillar axle centers (mm)	1,880
Clearance (mm)	382
Engine	4-cycle diesel
Horsepower of engine:	
Rated	80
Maximum	93

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Horsepower 19 at 2,600 rpm
Cylinder bore (mm) 92
Piston stroke (mm) 102
The starting engine is mounted on the left side of the block of the diesel engine.

Clutch
Transmission
Speed (km/hr):

Dr., single-plate
5 speeds forward, 4 reverse

First gear	2.25
Second gear	3.6
Third gear	5.14
Fourth gear	7.4
Fifth gear	9.65

First gear	2.66
Second gear	4.25
Third gear	6.10
Fourth gear	8.75

Caterpillars: 36 links in each band
Width of track (mm) 500

Electrical equipment 250 watt generator, 12 volt, with disconnecting clutch

Headlights 2 in front, one rear

Basic fuel	Diesel fuel, summer and winter
Starting engine fuel	Gasoline, first and second grade
Fuel tank capacities (liters):	

Diesel	230
Gasoline	7 (4)

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SPECIFICATION OF THE KT-12 SKIDDING TRACTOR

Type tractor	Crawler skidding tractor
Weight of fueled tractor (kg)	5,750
Over-all dimensions (mm):	
Length	4,505
Width	1,900
Height	2,415
Tread, measured between track centers (mm)	1,480
Clearance (mm)	560
Pull on drawbar (kg)	3,100
Specific pressure on the ground (kg/sq cm)	0.40
Engine	4-cycle, gas generator
Number of cylinders	6
Cylinder bore (mm)	101.6
Piston stroke (mm)	114.3
Working volume of cylinders (liters)	5.55
Compression ratio	7.0
Maximum horsepower	35 at 2,300 rpm
Engine is started by a 2-horsepower starting engine.	
Gas generator	Model KhTZ-TKG, reverse gasification process, single lined
Diameter of gasification chamber (mm)	334
Diameter of fuel opening (mm)	110
Number of tuyeres	10
Diameter of tuyere openings (mm)	10
Total cross section of tuyeres (sq cm)	7.85
Distance between tuyeres and fuel opening (mm)	110
Type grating	Fixed, demountable, 3-section
Hopper capacity (cu m)	0.15
Diameter of loading hatch opening (mm)	336
Height of gas generator (mm)	1,620
Weight of gas generator without fuel (kg)	217
Coarse filter	2 Tsiklon filters
Cooling surface of radiator (sq m)	3.85
Fine filter	2-section with 57.5-liter Raschig rings

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Lubrication system	Gear-type pump, 7.0-liter capacity
Cooling system	Water, forced by centrifugal pump
Fuel feed	
Type	Mixed, ejector type
Air cleaner	Oil bath
Carburetor	K-12
Capacity of starting engine fuel tank (liters)	7
Electrical equipment	
Firing order	1, 5, 3, 6, 2, 4
Generator	GA-08 with 190-watt relay-regulator
Battery	12 volt, 112 ampere-hours
Lighting	2 headlights and one spotlight
Clutch	Dry, double-plate
Transmission	
Gear ratios:	
First gear	3.714
Second gear	1.87
Third gear	1.20
Fourth gear	0.833 step-up
Fifth gear	0.609 step-up
Reverse	2.708
Bevel pinion and ring gear	Pair of bevel gears with straight teeth, gear ratio 4 : 1
Side clutch	Dry, multiplate, located on transverse shaft
Side transmission	Pair of bevel gears with straight teeth, gear ratio 5.2 : 1
Brakes	Hand brakes; band, floating, located on outer drum of side clutch.
Undercarriage	Moulded on 4 quarter-elliptic leaf springs
Drive wheels	Cast, with 2 rim-gears, 12 teeth; diameter of base circle, 470 mm; located in the rear
Idlers	Cast, with 2 rim-gears, 12 teeth; base diameter, 470 mm; located to the front
Support rollers	Stamped steel, 4 on each side; external diameter, 650 mm
Caterpillar track	Cast, cogged; 69 tracks; gauge of tracks, 120 mm; width of track, 340 mm; tracks are joined by floating pins 18 mm in diameter.

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Winch

Single-drum, reversible, power take-off by means of a chain drive, force on winch, 3,500 kg; capacity of winch drum, 70 meters of 15 mm diameter cable; winch is operated by a hand lever in driver's cab; band brake on winch

Loading shield

Drop, two-part, welded (5)

SOURCES

1. Moscow, U-2 pamphlet of Vsesoyuznoye Ob'yedineniye (All-Union Export-Import Association) Tekhnoeksport
2. Moscow, Avtomobil'naya i Traktornaya Promyshlennost', No 2, Feb 1952
3. Moscow, KD-35, pamphlet of Vsesoyuznoye Ob'yedineniye Tekhnoeksport
4. Moscow, S-80, pamphlet of Vsesoyuznoye Ob'yedineniye Tekhnoeksport
5. Moscow, KT-12, pamphlet of Vsesoyuznoye Ob'yedineniye Tekhnoeksport

[Appended figures follow:]

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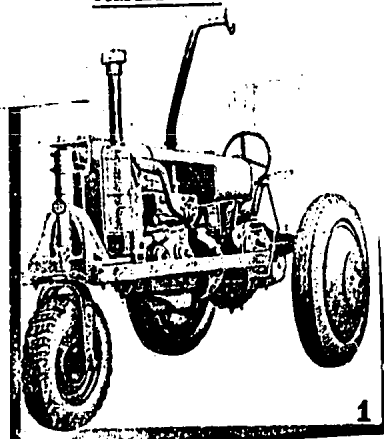


Figure 1. U-4 tractor.

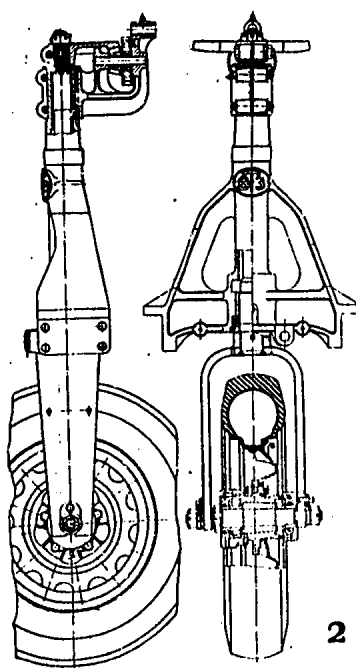


Figure 2. Front end of the U-4 tractor, side and front views.

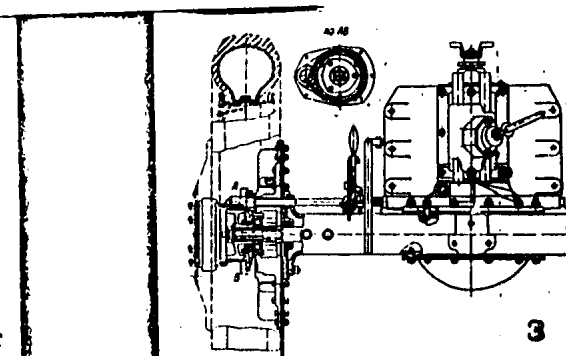


Figure 3. Brake system of the U-4 tractor. Inset is section AB.

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